

PATENT ABSTRACTS OF JAPAN

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(71)Applicant : TOTO LTD

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(72)Inventor : ASO YUJI

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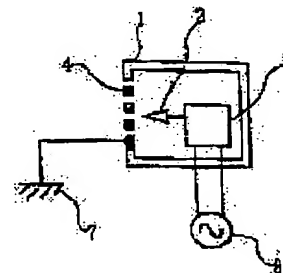
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(54) ION GENERATOR

(57)Abstract:

PROBLEM TO BE SOLVED: To provide an ion generator capable of stably supplying ions, not affecting human body even a blowout hole is touched.

SOLUTION: A needle electrode 2 as an discharge electrode and a negative ion generator comprising a high voltage power source 3 are disposed in an ABS made main body case 1, and is connected to an AC power surface 8. Only the blowout hole 4 of a negative ion blowout portion is made of a semiconductor, and is grounded by a ground 7. As the semiconductor, antistatic agent-kneaded-in conductive ABS material is used. When a blowout hole 4 is made of a conductor, preferably it is grounded by the ground 7 via a high resistor.



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CLAIMS

[Claim(s)]

[Claim 1] Said diffuser is an apparatus for generating ion with which the ion which was made to produce corona discharge and was generated is characterized by establishing the path which makes the charge which consists of a conductor in the apparatus for generating ion emitted from a diffuser, and is accumulated in said diffuser discharge gradually by impressing the high voltage to a discharge electrode.

[Claim 2] Said diffuser is an apparatus for generating ion with which the ion which was made to produce corona discharge and was generated is characterized by establishing the path which makes the charge which consists of a semi-conductor in the apparatus for generating ion emitted from a diffuser, and is accumulated in said diffuser discharge by impressing the high voltage to a discharge electrode.

[Claim 3] The apparatus for generating ion characterized by connecting a diffuser to AC power supply through resistance as a path which makes the charge accumulated in a diffuser discharge in an apparatus for generating ion given in claims 1 and 2.

[Claim 4] The apparatus for generating ion characterized by grounding a diffuser as a path which makes the charge accumulated in a diffuser discharge in an apparatus for generating ion according to claim 2.

[Claim 5] The apparatus for generating ion which considers as the path which makes the charge accumulated in a diffuser discharge gradually in an apparatus for generating ion according to claim 1, and is characterized by grounding a diffuser through resistance.

[Claim 6] It is the apparatus for generating ion characterized by resistance setting to 10 M omega or more in an apparatus for generating ion given in claims 3 and 5.

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DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[Field of the Invention] This invention relates to the apparatus for generating ion carried in an air cleaner etc., especially an anion generator.

[0002]

[Description of the Prior Art] The anion generator carried in an air cleaner etc. impresses the negative high voltage to discharge electrodes, such as a needle or a thin line, and generates an anion.

[0003] Since the high voltage was impressed to the above-mentioned discharge electrode, the discharge electrode was covered by diffusers made from plastics, such as ABS made of the synthetic resin of the same quality of the material as the body of an air cleaner, in order to prevent the electrification prevention by a user touching a hand accidentally, the injury with a needle, etc.

[0004]

[Problem(s) to be Solved by the Invention] When diffusers made from plastics, such as ABS, were used and the diffuser itself was charged in negative by external factors, such as friction, or when a diffuser was charged in negative by the anion itself generated with the anion generator, that an anion receives repulsive force with a diffuser and it is hard to be emitted to the diffuser exterior, it might become, and by the negative electric field which the electrified diffuser forms, the discharge itself might become weak and the anion yield might decrease.

[0005] Moreover, when the diffuser was touched at the time of anion generating, there was a problem of safety, such as ***** being charged by the anion, and receiving electric shock, when an electric conduction object is touched in the condition since it amounts to 2kV or more said to sense electric shock general depending on the case.

[0006] As the cure, as it was in the publication of JP,63-126044,U, missing the charge charged by grounding the diffuser made of synthetic resin was performed, but when there were extremely many amounts of generation of an anion, because the diffuser made of synthetic resin was grounded, a charge might not run away.

[0007] This invention solves the problem of the above-mentioned Prior art, can supply ion adequately to the exterior in large quantities, and even when a diffuser is touched, it aims at offering the hardly charged apparatus for generating ion on the body.

[0008]

[The means for solving a technical problem, and its operation and effectiveness] The ion which the 1st invention made in order to solve the above-mentioned technical problem made produce corona discharge by impressing the high voltage to a discharge electrode, and was generated is characterized by said diffuser establishing the path which makes the charge which consists of a conductor and is accumulated in said diffuser discharge gradually in the apparatus for generating ion emitted from a diffuser.

[0009] The ion which the 2nd invention made produce corona discharge by impressing the high voltage to a discharge electrode, and was generated is characterized by said diffuser establishing the path which makes the charge which consists of a semi-conductor and is accumulated in said diffuser discharge in the apparatus for generating ion emitted from a diffuser.

[0010] The conductor said here is thing about 1 M omega or less in surface specific resistance, and surface specific resistance is comparatively low also in a metal and conductive resin as an example.

[0011] The semi-conductor said here is the thing of the range of 10M-omega-10Tohm about in surface specific resistance, and surface specific resistance is comparatively high also in conductive resin as an example.

[0012] As a path which makes the charge accumulated in a diffuser discharge, it may ground to a direct ground by connecting wiring to a diffuser, or may connect with commercial alternating current 100V through high resistance of 20 M omega or more as an object for current limiting.

[0013] If it is only touch-down at a direct ground when a diffuser is a conductor, and the path which makes the charge accumulated in a diffuser discharge connects wiring to a diffuser, the anion generated by corona discharge will collide with the diffuser mostly maintained at zero potential compulsorily, and will escape to a ground. A diffuser is maintained at the low electronegative potential which exists seemingly in order in other words to miss gradually the charge which is in the rate which escapes to the ground of the anion which collided with the diffuser by grounding a diffuser to a ground through resistance and which is accumulated in a diffuser to a ground to it. Thereby, an anion receives repulsive force from a diffuser and can emit it now to the exterior. Since the potential maintained at a diffuser is low, when a diffuser is touched, it is uninfluent to people. The same effectiveness is acquired even if it connects a diffuser to AC power supply through resistance.

[0014] If the path which makes the charge accumulated in a diffuser discharge is established since the semi-conductor itself has high resistance when a diffuser is a semi-conductor, since a charge is discharged gradually, it may ground a diffuser to a direct ground.

[0015]

[Embodiment of the Invention] In order to clarify further a configuration and an operation of this invention explained above, the suitable example of this invention is explained below.

[0016]

[Example] Drawing 1 is the apparatus for generating ion of this invention. In the body case 1 made from ABS, the anion generator which serves as a discharge electrode from a high voltage power supply 3 in a needle electrode 2 was installed, and it connected with AC power supply 8. Only the diffuser 4 of the blowdown section of an anion was used as the semi-conductor, and was grounded with a ground 7. As a semi-conductor, the conductive ABS material which scoured the antistatic agent was used. It is better to ground to a ground 7 through high resistance, when a diffuser 4 is used as a conductor.

[0017] Drawing 2 is an apparatus for generating ion which is the gestalt of other operations of this invention. Although the point different from drawing 1 was grounded with a ground 7 by drawing 1, at this example, it is the point connected to AC power supply 8 through the 100-M ohm resistance 9, and others are the same as that of drawing 1.

[0018] Drawing 3 is the example of a comparison of this invention, and set the body case 5 made from ABS, and the diffuser 6 to the same ABS.

[0019] In the example of a comparison of this invention of drawing 2, and drawing 3, the body electrification potential of 1 minute after at the time of touching the anion yield when grinding the anion yield at the time of no being diffuser charged and a diffuser against paper, and electrifying them compulsorily and a diffuser is shown in Table 1.

[0020]

[Table 1]

評価項目	従来技術 (比較例)	本発明 (実施例)
吹き出し口無帯電時の マイナスイオン濃度	1 9 4 0 0 (個/ c c)	1 2 0 2 0 (個/ c c)
吹き出し口強制帯電時 のマイナスイオン濃度	1 0 (個/ c c)	1 3 7 2 0 (個/ c c)
吹き出し口に手を触れ た場合の人体帯電電位	- 2 . 2 8 (k V)	- 0 . 3 8 (k V)

[0021] In the example of a comparison, an anion was hardly emitted at the time of diffuser electrification, but the body electrification potential when touching a diffuser was also stabilized in what kind of case in this invention to having been set to - 2kV or more, and the anion was emitted, and body electrification potential hardly rose, either.

[0022] Drawing 4 makes the aluminum of a conductor the diffuser 6 of the apparatus for generating ion of drawing 2, and evaluates the anion yield emitted while changing the value of resistance 9 to arbitration.

[0023] Although, as for the anion, resistance was not emitted to the exterior in a less than 10-M ohm field from the result of drawing 4, when resistance is set to 10 M ohm or more, it turns out that an anion came to be emitted to the exterior.

[0024]

[Effect of the Invention] As explained above, even when it is stabilized and emitted outside and a diffuser is touched with a lot of ion, according to the apparatus for generating ion of this invention, body electrification potential hardly rises.

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DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]

[Drawing 1] Drawing showing the example of this invention

[Drawing 2] Drawing showing the gestalt of other operations of this invention

[Drawing 3] Drawing showing the example of a comparison of this invention

[Drawing 4] Drawing showing what evaluated the anion yield emitted while making the diffuser 6 of the apparatus for generating ion of drawing 2 into the aluminum of a conductor and changing the value of resistance 9 to arbitration

[Description of Notations]

1 Five Body case

2 Needle Electrode

3 High Voltage Power Supply

4 Six Diffuser

7 Ground

8 AC Power Supply

9 Resistance

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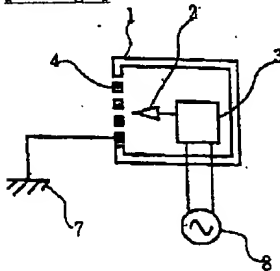
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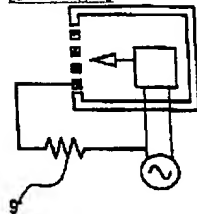
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DRAWINGS

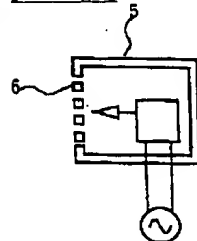
[Drawing 1]



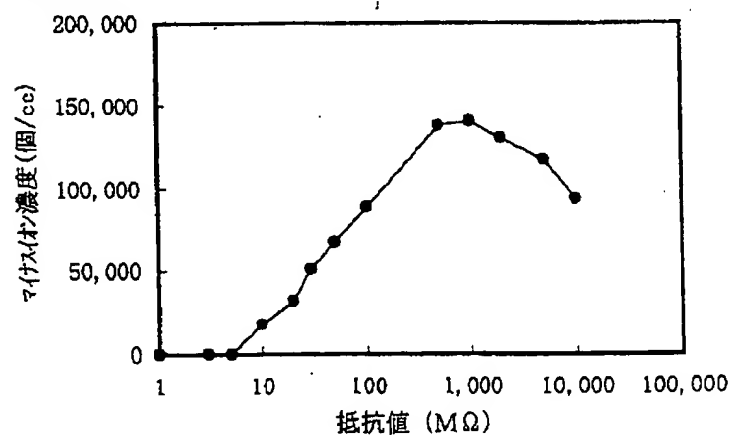
[Drawing 2]



[Drawing 3]



[Drawing 4]



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